

Exhibit C

R. E. CECIL.
MECHANICAL TOY.
APPLICATION FILED MAR. 15, 1909.

933,623.

Patented Sept. 7, 1909.

Fig. 1

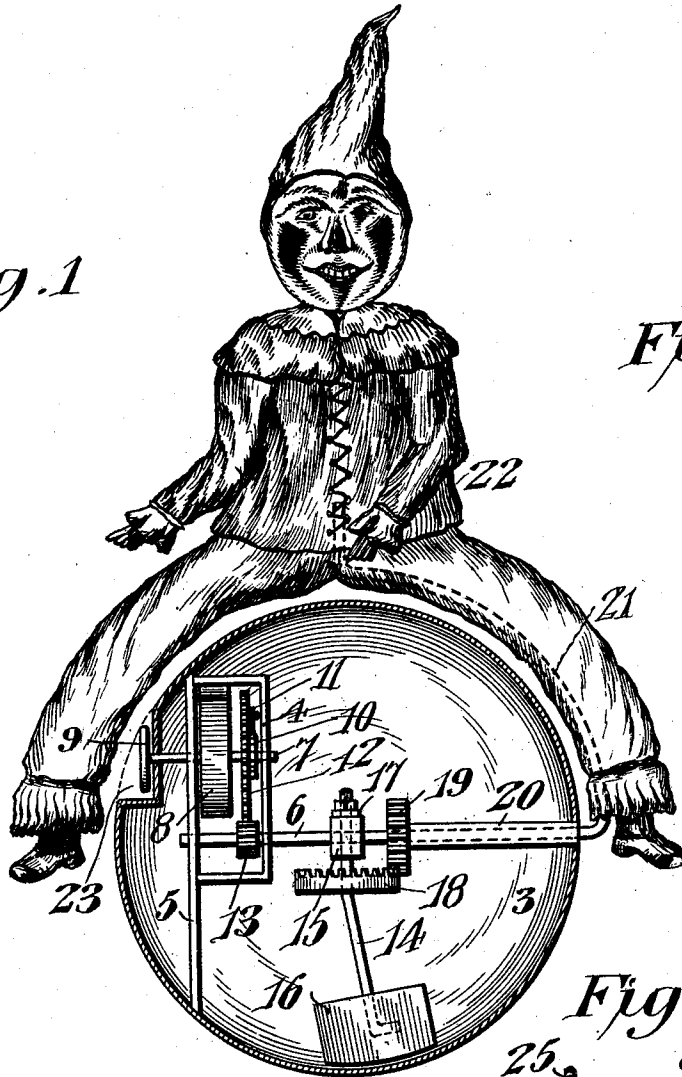


Fig. 4.

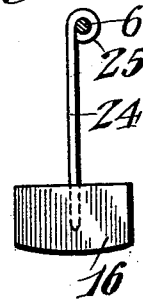


Fig. 2.

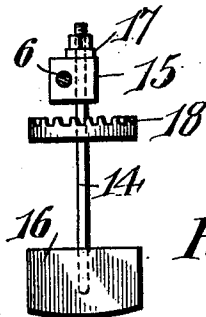
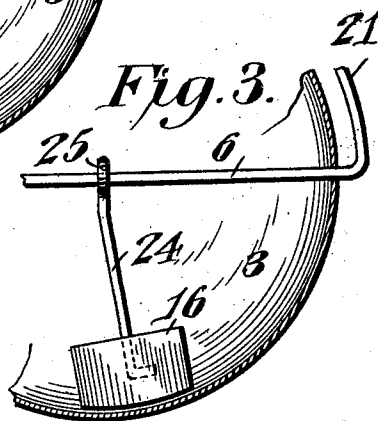


Fig. 3.



Witnesses
Jas. E. McLaughlin
Fridine B. Wright

Robert E. Cecil, Inventor

By

E. G. Siggers

Attorney

UNITED STATES PATENT OFFICE.

ROBERT E. CECIL, OF AMBRIDGE, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO PAUL W. BROWN, OF PITTSBURG, PENNSYLVANIA.

MECHANICAL TOY.

933,623.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ROBERT E. CECIL, a citizen of the United States, residing at Ambridge, in the county of Beaver and State of Pennsylvania, have invented a new and useful Mechanical Toy, of which the following is a specification.

My invention relates to toys and more particularly to that class of mechanical toys in which a ball or other rotating body contains internal mechanism which acts to rotate the ball or body, this ball preferably supporting a figure or other amusing device, which is balanced upon the ball.

The object of my invention is to provide a toy of simple construction, supporting the figure as described, in which the means of support is not readily apparent; and particularly a toy provided with internal mechanism acting to cause the ball or other rolling object to move either in a curved path or to take a sinuous or zig-zag path, thus, because of there being no apparent mechanism to this end, causing much amusement to the observer.

In the drawing I have shown an embodiment of my invention, and therein—

Figure 1 is a diametrical section of the ball or rolling body, the figure supported thereon being in elevation; Fig. 2 is a detail elevation of the balance-weight rotating mechanism; Figs. 3 and 4 are details showing modification of the balance-weight support.

In the drawings, 3, designates a rolling body, preferably in the form of a perfect sphere so that it may roll in any direction along a floor.

4 designates a casing or clockwork support attached to the interior of the ball in any suitable manner, as by the transverse plate or bar 5. It will be understood that this casing may either entirely inclose the clockwork or simply be a supporting frame in which the arbors are mounted.

6 designates a transverse shaft which passes through the supporting pieces 4 and 5, and through the opposite face of the ball. This shaft, in the particular application of my invention shown, extends upward and supports a figure as will hereafter be described. It is to be understood that this shaft is relatively rigid to the ball. In other words, that the ball rotates about the shaft.

Mounted within the framework 4 and 5 is

the arbor 7, to which is connected a spring 8, one end of which is to be fastened to the framework 4 and is thus connected to the ball so as to actuate a train of gears 12, 13. Mounted on the arbor 7 at one end is the ratchet wheel 10, and associated therewith is the dog 11. On the other end of the arbor 7 is the winding wheel or handle 9, which is contained in a recess 23, formed in the ball for this purpose. It will be understood, however, that the arbor 7 need have no wheel 9 for winding it, but that a detachable key may be inserted through an opening in the ball to engage with this arbor. Mounted upon the arbor 7 is the gear wheel 12, which engages with a pinion 13 on the shaft 6. It will be obvious from this description that upon turning the arbor 7 in one direction, the spring 8 will be wound up (being held from unwinding by the pawl and ratchet, 10, 11), and that when wound, the spring will tend to unwind, thus rotating the wheel 12.

As a means of preventing the shaft 6 from rotating through the action of the gear 12, I provide a balancing weight. To this end I provide a depending arm 14, which is attached rigidly to the shaft 6, and carries at its lower end a weight, 16. The arm, 14, may be attached in any suitable manner to the shaft 6, but in the construction shown in Fig. 1 in order to permit the axial rotation of the arm 14, I prefer to have the arm pass through a head 15 which is rigidly attached to the shaft 6, the upper end of the arm being screw threaded and further provided with a nut 17. The arm 14 has a rotary movement within the head 15, the latter forming a bearing for the rotation of the arm 14 in a horizontal plane. The weight 16, of course, acts to prevent the rotation of the shaft 6, and, hence, the actuation of the gear 12 through the spring 8 will act to carry the ball 3 around the shaft 6, as upon its axis, and therefore, the ball will be rolled along the floor by the internal mechanism.

If the arm 14 extends straight down vertically from its connection with the shaft 6, the ball will move in a straight line, provided, of course, the surface on which it rolls is level. If, however, the arm 14 be inclined to one side of a vertical plane cutting the point of attachment of the arm 14 to the shaft, then the ball will not only move forward under the impulsion of the clockwork,

but will also tend to move laterally, the resultant of these two motions being a curved path which the ball will take, this path being curved outwardly to the right or left, depending upon whether the weight 16 is to the right or left of said plane.

In order to make the ball roll in a sinuous or zig-zag path, it is necessary that the balancing weight 16 be shifted back and forth from one side of said vertical plane to the other as the ball moves. To this end, as before stated, the arm 14 is rotatable in the head 15, and the lower end of the arm is inclined from the vertical. In order to rotate this arm, I provide it with a crown gear, 18, which intermeshes with a gear 19 carried upon a sleeve 20, this sleeve being attached, in the construction shown, to the ball 3. While I have shown the sleeve 20 as being attached to the ball, it would act in precisely the same manner were it attached to the frame 4, it being only necessary that the gear 19 shall rotate with the ball and rotate independently of the shaft 6. It will be seen that as the ball rolls along the floor under the impulsion of the internal mechanism, the gear 19 will be rotated relatively to the shaft 6, and its teeth intermeshing with the crown gear 18 will rotate this gear and the arm 14 and that the rotation of this bent arm acts to throw the weight from one side to the other of the vertical center of the ball and that, hence, the ball will rock laterally from one side to the other as it rolls forward and thus describe either a sinuous or a zig-zag path.

While the ball as described above is in itself a complete toy, I prefer to mount thereon a figure, 22, of any desired character, this figure being supported by bending the wire forming the shaft, 6, upward and around the upper portion of the ball and into the figure. It will be seen that the legs of the figure, clad as they are in flowing habiliments, act to conceal the point of support, that is, the wire, 21, and that one of the legs conceals the key 9 or the key wheel in case the winding wheel 9 is left off, thus the figure is apparently supported entirely free from the ball, and it is difficult to see either how it is balanced or how the ball is actuated, and particularly, of course, to see why the ball takes its erratic course. While I have shown the figure astride of the ball, it will, of course, be understood that I may use any figure and arrange draperies thereon to conceal the support for the same and the winding opening or shaft.

Where it is not desired to cause the ball to have an erratic course, but merely that it should take a curved path in its movement, it is only necessary that the arm 14 should be bent in relation to the shaft 6 and that the arm should be fixed upon the shaft. A simple manner of doing this is shown in

Figs. 3 and 4, in which the arm 24 is simply bent around the shaft 6 so that the arm is rigid with the shaft and the weight will act to hold the shaft from rotation. In Fig. 3, the weight is shown as shifted to the right of the vertical center of the ball, and, hence, the ball will always describe a curved path toward the right, while the figure will be supported at an inclination to the vertical.

While I have described what I believe to be a very simple and perfect manner of applying my invention, I do not wish to be limited to this, as it may be modified in many ways without departing from the spirit thereof.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportions and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim as new and desire to secure by Letters-Patent, is:

1. A toy including a ball, mechanism for rotating said ball, and means contained within the ball for causing it while rotating to laterally rock in opposite directions.

2. A toy including a ball, clockwork attached to the inside of said ball for rotating it, and a weight within said ball supported below the axis thereof, and to one side of a vertical plane cutting the middle of said ball in the direction of its movement.

3. A toy including a ball, mechanism for rotating said ball, a weight within said ball supported below the axis thereof, and means for automatically shifting said weight from one side to the other of a vertical plane cutting the middle of said ball in the direction of its movement.

4. A toy including a ball, clockwork attached to the ball on interior thereof for rotating it, a shaft around which said ball is adapted to rotate and with which said clockwork gears, means for preventing the rotation of the shaft, and a connection between said clockwork and the shaft.

5. A toy including a ball, clockwork attached to the interior of said ball, a transverse shaft within said ball around which it rotates, a gear on said shaft engaging with the clockwork, a depending arm on the shaft, and a balancing weight supported on the depending arm.

6. A toy including a ball, a transverse axial shaft around which said ball rotates, clockwork attached to the interior of said ball, a gear on said clockwork engaging with a pinion on the shaft, a depending arm mounted on the shaft, and having an axial

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rotatable movement, said shaft being bent laterally, and means, rotatable with said ball, for rotating the arm to cause the weight carried thereby to shift from one side to the other of a vertical plane cutting the middle of said ball in the direction of its movement.

7. A toy including a ball, a transverse axial shaft around which said ball rotates, clockwork attached to the interior of said ball, a pinion on the shaft gearing with said clockwork, a depending arm mounted on the shaft to have an axial rotatable movement, the lower end of said arm being bent laterally, a weight carried by the lower end of the arm, a gear wheel carried by said arm, a sleeve surrounding the shaft but independent thereof and connected to rotate with said ball, and a gear on the sleeve engaging on the rotatable arm to rotate the same as said ball moves forward and shift the weight from one side to the other of a vertical plane cutting the middle of said ball in the direction of its movement.

8. A toy including a ball, mechanism in

interior thereof for rotating it, an axial shaft around which said ball rotates, and a balancing weight on said shaft, one end of said shaft extending out through said ball, and being bent upward around the same to support a figure thereon.

9. A toy including a ball, clockwork on interior thereof for rotating it, a transverse axial shaft around which said ball rotates, a gear on the shaft engaging with the clockwork, an arm depending from the shaft and carrying a weight at its lower end, said weight being below the axis of said ball, said shaft extending out of said ball, then being bent upward to the vertical center thereof and there supporting a figure.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ROBERT E. CECIL.

Witnesses:

OTTO UHLE,
GEORGE E. POUCHER.